

REMARKS

The Examiner is thanked for the due consideration given to the application. Claims 19-22, 25 and 38-40 remain in this application without amendment.

Entry of this response under 37 CFR §1.116 is respectfully requested because it places the application in condition for allowance.

Rejection under 35 USC §103

Claims 19-22, 25, and 38-40 are rejected under 35 U.S.C. §103(a) as being unpatentable over PORTER (US 2003/0216685) in view of LANG (US 5,609,572). Claim 24 is rejected under 35 U.S.C. §103(a) as being unpatentable over PORTER in view of LANG, and further in view of GRIEGO et al. (US 6,663,596). Claims 26-29 and 31 are rejected under 35 U.S.C. §103(a) as being unpatentable over PORTER in view of LANG, and further in view of BALBIERZ et al. (US 5,156,596). Claim 33 is rejected under 35 U.S.C. §103(a) as being unpatentable over PORTER in view of LANG, and further in view of ULDALL (US 4,493,696).

These rejections are respectfully traversed.

The present invention pertains to an infusion system that is illustrated, by way of example, in Figure 1 of the application, which is reproduced below.

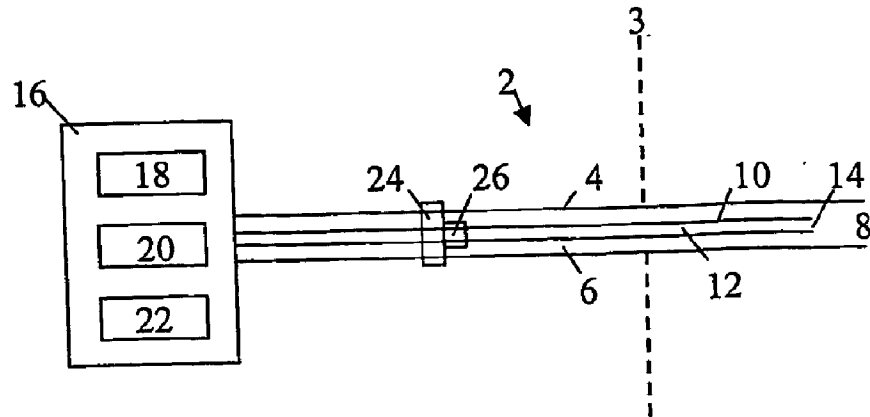


Fig. 1

Figure 1 shows a catheter 2 having an outer lumen 6 and an inner lumen 12. An external pump 16 includes a pumping means 16, a reservoir means 20 and a control means 22. The control means 22 controls the pumping means 16 such that a liquid substance is administered to a patient, where the liquid substance is followed in time by a flushing liquid sequence.

The claim 19 of the present invention sets forth:
"the volume of the liquid pulse of the substance is approximately the same as a volume defined in said outer catheter lumen between the inner catheter outflow opening and the outer catheter outflow opening, and a volume of the flushing liquid is equal to or slightly larger than the volume defined in said outer catheter lumen."

The advantages of the present invention, such as set forth in instant claim 19, is discussed at page 4, lines 19-29 of the specification, which states:

Thus, when the inner catheter is fixated to the outer catheter the distance between the two catheters' outflow openings are known. Since the catheter dimensions and the distance are known, the minimal volume required to flush the active substance from the inner catheter outflow opening and into target area can be calculated. The flushing volume must, however, be chosen slightly larger because of the laminar flow. This information is a requirement in order to program a flushing sequence after each active substance pulse volume and to preclude that each pulsed volume of an active substance in a pulsating sequence is effectively washed out. Therefore, the dual-catheter using a pair design creates a prerequisite for effective administration of pulsating sequences for liquids.

PORTER pertains to liquid embolic composition delivery devices. The Official Action refers to Figures 1 and 1A-1D of PORTER. Figure 1 of PORTER is reproduced below.

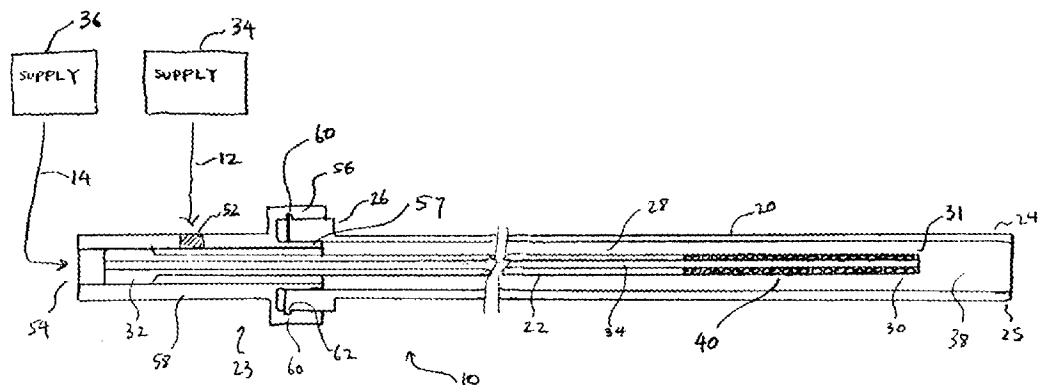


FIG. 1

Figure 1 of PORTER shows a catheter device with an outer tubular element 20 and an inner tubular element 22. However, PORTER fails to disclose or infer the volume relationships set forth in claim 19 of the present invention.

The Official Action acknowledges that PORTER fails to disclose that the external pump device is a controller. PORTER also fails to disclose the volume relationship between the flushing liquid and the volume defined in said outer catheter lumen. Then the Official Action turns to LANG.

LANG pertains to a cassette infusion system. The Official Action refers to Figure 9 of LANG, which is reproduced below.

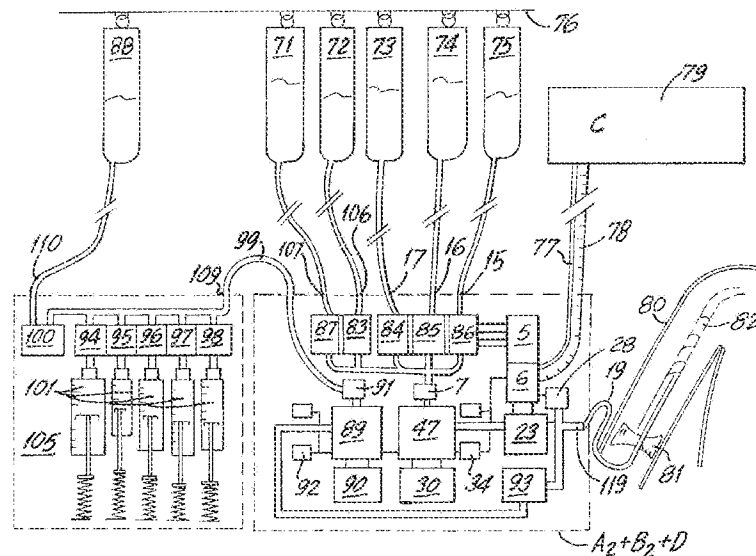


FIG. 9

Figure 9 of LANG shows an infusion system with an infusion pump cassette A_2 , a valve pump syringe actuating device

B₂, an infusion distribution cassette D, several of infusion containers 71-75 and a control device C79.

The Official Action refers to column 2, lines 30-37 of LANG and asserts that LANG teaches a pulsed flow sequence by introducing a controller C79 which controls the pumping means A2, B2 and D; and it would be obvious, as taught by the combination of PORTER and LANG, that the total flushing volume of is larger than the volume of the outer catheter lumen of PORTER. However, there is no explicit teaching of this in either PORTER or LANG.

However, in column 2, LANG merely discloses a programming controller which provides a pulse infusion caused by controlling the opening of valves. In Figure 3, which is reproduced below, the structure of these valves is disclosed.

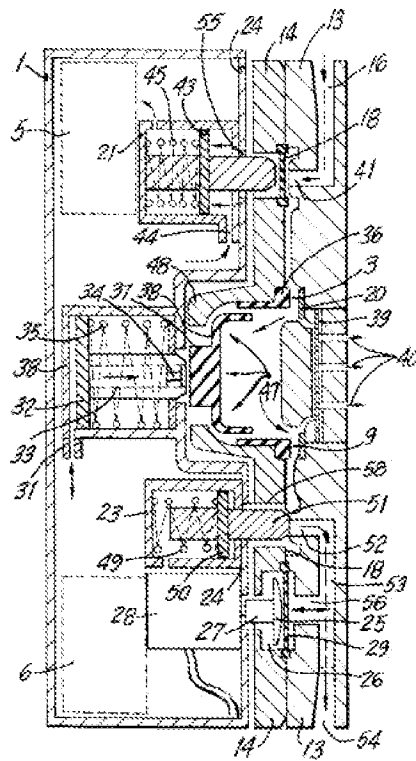


FIG. 3

In column 7, LANG introduces the function of the controlling device. The controlling device C79 controls electropneumatic transducers 5 and 6 and thus close/open the valves 21 and 23 for different period to control the dosage rate of the infusion.

In another words, the program control the particular time to open the valves and cause the flush. LANG fails to teach or infer the volume relationship of the flushing liquid.

LANG and PORTER both fails to teach or infer that a volume of the flushing liquid is equal to or slightly larger than the volume defined in said outer catheter lumen, as recited in claim 19.

The other applied art references of BALBIERZ et al., GRIEGO et al. and ULDALL also fail to address the deficiencies of PORTER and LANG.

One of ordinary skill and creativity would thus fail to produce a claimed embodiment of the present invention from acknowledge of the applied art references. A *prima facie* case of unpatentability has thus not been made.

These rejections are believed to be overcome, and withdrawal thereof is respectfully requested.

Conclusion

These rejections are believed to have been overcome, obviated or rendered moot, and no issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future submissions, to charge any deficiency or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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